CLAIMS

What is claimed is:

1. A method for turning on an optical radiation source, said optical source having associated therewith control circuitry to control the temperature of said optical source, the method comprising pre-heating said optical source before said optical source is caused to emit optical radiation.

2. The method of claim 1, wherein optical radiation is emitted as a result of current flowing through said optical source, wherein pre-heating includes:

heating said optical source to an initial temperature using a heater; and

subsequently heating said optical source by causing a current to flow through said optical source.

3. The method of claim 1, wherein optical radiation is emitted as a result of current flowing through said optical source above a threshold value, and wherein said optical source has associated therewith control circuitry to control the current flowing through said optical source, and wherein pre-heating said optical source comprises causing current to flow through said optical source with an intensity at least partly below said threshold value, whereby said optical source is pre-heated while still emitting negligible optical power.

4. The method of claim 2, further comprising increasing the intensity of said current during the pre-heating of said optical source up to a predefined minimum current value.

5. The method of claim 2, wherein said initial temperature is a function of at least one parameter selected from the group consisting of a minimum current value, a temperature to be reached by said optical source during operation, and an estimation of the intensity of the current flowing through said optical source in emitting said radiation during operation.

6. The method of claim 5, further comprising controlling the temperature of said optical source during said pre-heating as a function of a target temperature.

7. The method of claim 6, wherein said initial temperature is selected as said target temperature.

8. The method of claim 4, further comprising gradually increasing the power of the optical radiation generated by said optical source after said predefined minimum current value is reached.

9. The method of claim 8, wherein said increase in the power of the optical radiation generated by said optical source is effected in a step-wise manner.

10. The method of claim 9, further comprising controlling the temperature of said optical source by means of said control circuitry by assigning a new temperature target for each step in said step-wise

increase of the power of said optical radiation generated by said optical source.

11. The method of claim 1, further comprising:

increasing the power of said optical radiation generated by said optical source up to a final optical power value;

increasing the temperature of said optical radiation source up to a final temperature value; and

associating with said optical source a wavelength control function to control the wavelength of said optical radiation generated by said optical source after said final optical power and temperature values are reached.

12. The method of claim 11, further comprising assigning to said wavelength control function a final wavelength target value for the wavelength of the optical radiation generated by said optical source.

13. The method of claim 11, further comprising disabling said temperature control circuitry when said wavelength control function is enabled.

14. The method of claim 1, wherein the optical radiation source has a bias current, a target operating temperature, and a target emission wavelength, the method comprising changing said bias current for maintaining the actual emission wavelength of said optical source at said target emission wavelength while pre-heating said optical source towards said target operating temperature.

15. The method of claim 1, wherein the optical radiation source has a bias current, further comprising:

associating to said optical source a power control function, and

gradually superposing onto said bias current a modulation current, while maintaining activation of said power control function.

16. The method of claim 1, further comprising:

generating a modulation current to modulate said optical source to produce data transmission via said optical radiation, so that said optical source has an extinction ratio defined as the ratio of the power of said optical radiation when said optical radiation source is modulated to produce 1 and 0 logical values, respectively; and

controlling said extinction ratio.

17. The method of claim 16, further comprising at least temporarily discontinuing control of the power generated by said optical radiation source to permit control of said extinction ratio.

18. The method of claim 1, further comprising:

storing the value of at least one operating parameter of said optical radiation source during operation; and

implementing said method for turning on said optical radiation source as a function of said at least one value stored.

19. The method of claim 18, further comprising updating said at least one value stored in order to compensate for ageing phenomena affecting said optical radiation source.

20. The method of claim 1, further comprising selecting a laser diode as said optical source.

21. The method of claim 2, further comprising associating with said optical source at least one temperature conditioning element for controlling the temperature of said optical source.

22. The method of claim 21, further comprising using said temperature conditioning element as said heater for heating said optical source to said initial temperature.

23. The method of claim 1, further comprising associating with said optical source at least one current driver to selectively control the intensity of current flowing through said optical source.

24. A system comprising:

an optical radiation source; and

control circuitry to control the temperature of said optical source, wherein said circuitry includes heating means for pre-heating said optical source before said optical source is caused to emit optical radiation.

25. The system of claim 24, wherein said optical source emits said optical radiation as a result of current flowing through said optical source and wherein

said control circuitry is arranged to pre-heat said optical source by:

heating said optical source to an initialtemperature using a heater; and

subsequently heating said optical source by causing a current to flow through said optical source.

26. The system of claim 24, wherein said optical source emits said optical radiation as a result of current flowing through said optical source above a threshold value and in that said control circuitry is arranged to pre-heat said optical source by causing current to flow through said optical source with an intensity at least partly below said threshold value, whereby said optical source is pre-heated while still emitting negligible optical power.

27. The system of claim 25, wherein said control circuitry is arranged to increase the intensity of said current during the pre-heating of said optical source up to a predefined minimum current value.

28. The system of claim 25, wherein said control circuitry is arranged to bring said optical radiation source during said pre-heating to a said initial temperature which is a function of at least one parameter selected from the group consisting of a minimum current value, a temperature to be reached by said optical source during operation, and an estimation of the intensity of the current flowing through said optical source in emitting said radiation during operation.

29. The system of claim 25, wherein said control circuitry is arranged to control the temperature of said optical source during said pre-heating as a function of a target temperature.

30. The system of claim 29, wherein said initial temperature is selected as said target.

31. The system of claim 27, wherein said control circuitry is arranged to gradually increase the power of the optical radiation generated by said optical source after said predefined minimum current value is reached.

32. The system of claim 31, wherein said control circuitry is arranged to increase the power of the optical radiation generated by said optical source in a step-wise manner.

33. The system of claim 32, wherein said control circuitry is arranged to control the temperature of said optical source by assigning a new temperature target for each step in said step-wise increase of the power of said optical radiation generated by said optical source.

34. The system of claim 24, wherein said control circuitry is arranged to:

increase the power of said optical radiation generated by said optical source up to a final optical power value;

increase the temperature of said optical radiation source up to a final temperature value; and

perform a wavelength control function of said optical source to control the wavelength of said optical radiation generated by said optical source after said final optical power and temperature values are reached.

35. The system of claim 34, wherein said control circuitry is arranged to assign to said wavelength control function a final wavelength target value for the wavelength of the optical radiation generated by said optical source.

36. The system of claim 34, wherein said control circuitry is arranged to disable temperature control when said wavelength control function is enabled.

37. The system of claim 24, wherein said optical source has a bias current, a target operating temperature, and a target emission wavelength, and wherein said control circuitry is arranged to control said bias current for maintaining the actual emission wavelength of said optical source at said target emission wavelength while said heating means in said circuitry pre-heats said optical source towards said target operating temperature.

38. The system of claim 24, wherein said optical radiation source has a bias current and said control circuitry is arranged to control the power emitted by said optical source, said control circuitry arranged to gradually superpose onto said bias current a modulation current, while maintaining activation of said control circuitry to control the power emitted by said optical source.

39. The system claim 24, wherein said control circuitry is arranged to:

generate a modulation current to modulate said optical source to produce data transmission via said optical radiation, so that said optical source has an extinction ratio defined as the ratio of the power of said optical radiation when said optical radiation source is modulated to produce 1 and 0 logical values, respectively; and

control said extinction ratio.

40. The system of claim 39, wherein said control circuitry is arranged to at least temporarily discontinue control of the power generated by said optical radiation source to permit control of said extinction ratio.

41. The system of claim 24, further comprisinga memory for storing the value of at least one operating parameter of said optical radiation source during operation, wherein said control circuitry is arranged to turn on said optical radiation source as a function of said at least one value stored in said memory.

42. The system of claim 41, wherein said control circuitry is arranged to update said at least one value stored in said memory in order to compensate for ageing phenomena affecting said optical radiation source.

43. The system of claim 24, wherein said optical radiation source comprises a laser diode.

44. The system of claim 24, further comprising at least one of:

a temperature conditioning element for controlling the temperature of said optical source; and

a current driver to selectively control the intensity of current flowing through said optical source.

45. The system of claim 44, wherein said temperature conditioning element is used as the heater for heating said optical source to said initial temperature.